



Fig. 27.

subjected to the decomposing power of the same current of electricity, passing in the vessel A between large platina plates,, and in the vessel B between small

wires. If a third decomposing apparatus, such as that delineated, fig. 26 (446), be connected with the wires at *a b*, fig. 27, it will serve sufficiently well, by the degree of decomposition occurring in it, to indicate the relative state of the two plates as to intensity; and if it then be applied in the same way, as a test of the state of the wires at *a' b'*, it will, by the increase of decomposition within, show how much greater the intensity is there than at the former points. The connections of P and N with the voltaic battery are of course to be continued during the whole time.

461. A third form of experiment in which difference of intensity was obtained, for the purpose of testing the principle of equal chemical action, was to arrange three volta-electrometers, so that after the electric current had passed through one, it should divide into two parts, each of which should traverse one of the remaining instruments, and should then reunite. The sum of the decomposition in the two latter vessels was always equal to the decomposition in the former vessel. But the *intensity* of the divided current could not be the same as that it had in its original state; and therefore *variation of intensity has no influence on the results if the quantity of electricity remain the same.* The experiment, in fact, resolves itself simply into an increase in the size of the electrodes (460).

462. The *third point*, in respect to which the principle of equal electro-chemical action on water was tested, was *variation of the strength of the solution used.* In order to render the water a conductor, sulphuric acid had been added to it (442); and it did not seem unlikely that this substance, with many others, might render the water more subject to decomposition, the electricity remaining the same in

quantity. But such did
not prove to be the case. Diluted
sulphuric acid, of different
strengths, was introduced into different
decomposing apparatus,
and submitted simultaneously to the
action of the same electric